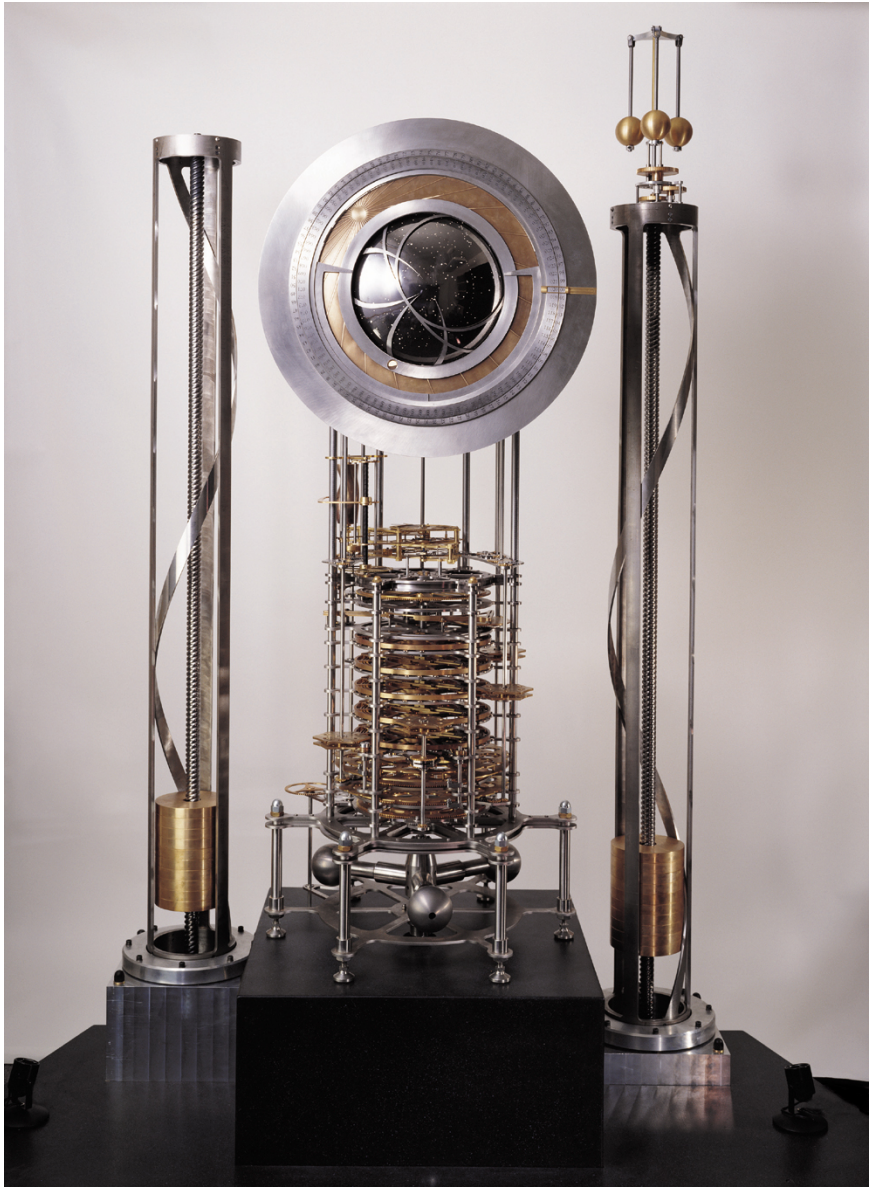
WHY WE CAN'T HAVE THE INTERNET OF NICE THINGS

SEAN DAGUE
DAGUE.NET
@SDAGUE



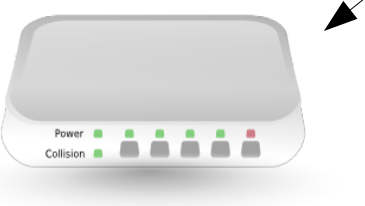
Standard IoT Consumer Pattern

Examples:
Philips Hue
Samsung Smart Things
Wink

Custom Mobile App

Vendor Cloud Service

Custom Transport



Device

Hub

Internet Gateway

Points of Failure

Does it support your mobile device

What if the service goes away?

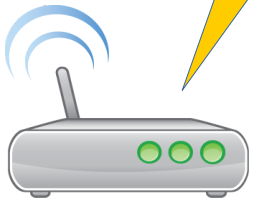
I really need to write automation inside a mobile app?

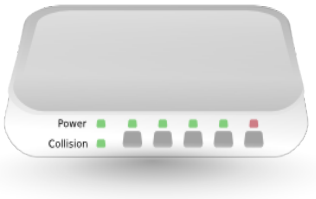
Custom Mobile App

Vendor Cloud Service

Crowded Spectrum

Bad firmware update?





Custom Transport

What if you can't get to their service.

Device

Hub

Internet Gateway

What if your home internet has an outage

HOME › COMPUTING › NEST TO PERMANENTLY BRICK REVOLV SMART HOME DEVICES

Nest to permanently brick Revolv smart home devices

By Joel Hruska on April 5, 2016 at 2:13 pm | 44 Comments

0 shares

Back in 2014, Google/Alphabet's Nest bought a rival home autom
Prior to the acquisition, Revolv had focused on building a smart h
that could control lights, open doors, and even brew coffee on de
Revolv stopped selling its own products, though it pledged to cor
existing customer base. Now, Nest is pulling the plug on that pror
that Revolv hardware and software was sold with a "lifetime subs

Let's be clear on this point: Nest *isn't* saying "We won't support th
infrastructure with future updates." Nest is pulling the plug on Rev
from the Revolv website: "As of May 15, 2016, your Revolv hub an
work."

Nest Thermostat Glitch Leaves Users in th

Disruptions

By NICK BILTON JAN. 13, 2016

Photo illustration by Jim DeMaria/The New York Times and photo by Ben Margot/Associated Press.

The Nest Learning Thermostat is dead to me, literally. Last week, my once-beloved "smart" thermostat suffered from a mysterious software bug that drained its battery and sent our home into a chill in the middle of the night.

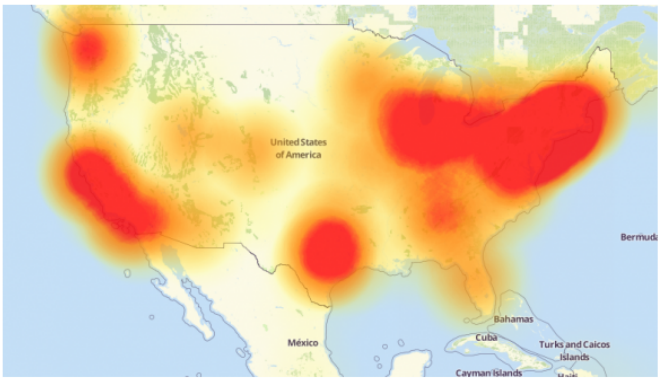
Although I had set the thermostat to 70 degrees overnight, my wife and I were woken by a crying baby at 4 a.m. The thermometer in his room read 64 degrees, and the Nest was off.

This didn't happen to just me. The problems with the much-hyped thermostat, which allows users to monitor and adjust their thermostats on their smartphones (Google purchased Nest Labs for $3.2 billion in 2014), affected an untold number of customers when the device went haywire across America.

21 OCT 16 Hacked Cameras, DVRs Powered Today's Massive Internet Outage

A massive and sustained Internet attack that has caused outages and network congestion today for a large number of Web sites was launched with the help of hacked "Internet of Things" (IoT) devices, such as CCTV video cameras and digital video recorders, new data suggests.

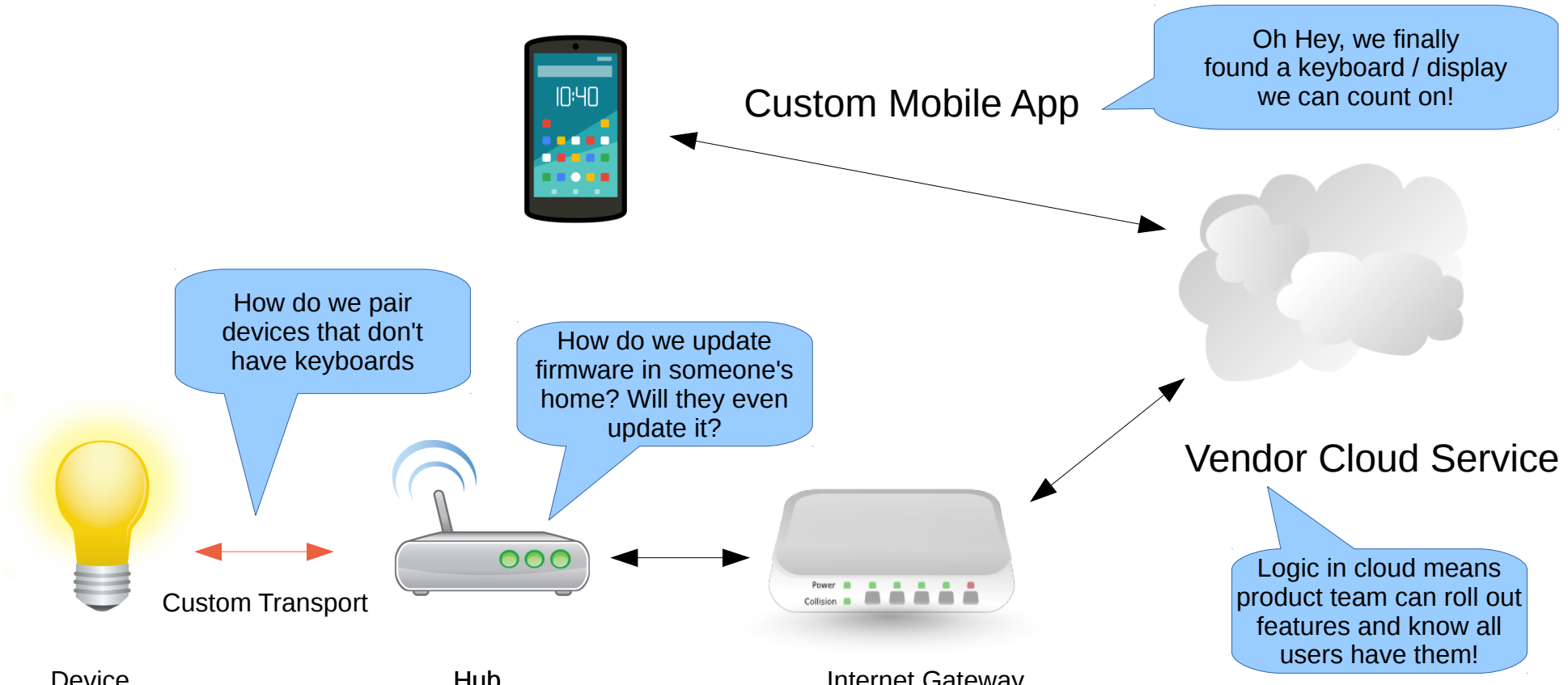
Earlier today cyber criminals began training their attack cannons on **Dyn**, an Internet infrastructure company that provides critical technology services to some of the Internet's top destinations. The attack began creating problems for Internet users reaching an array of sites, including Twitter, Amazon, Tumblr, Reddit, Spotify and Netflix.



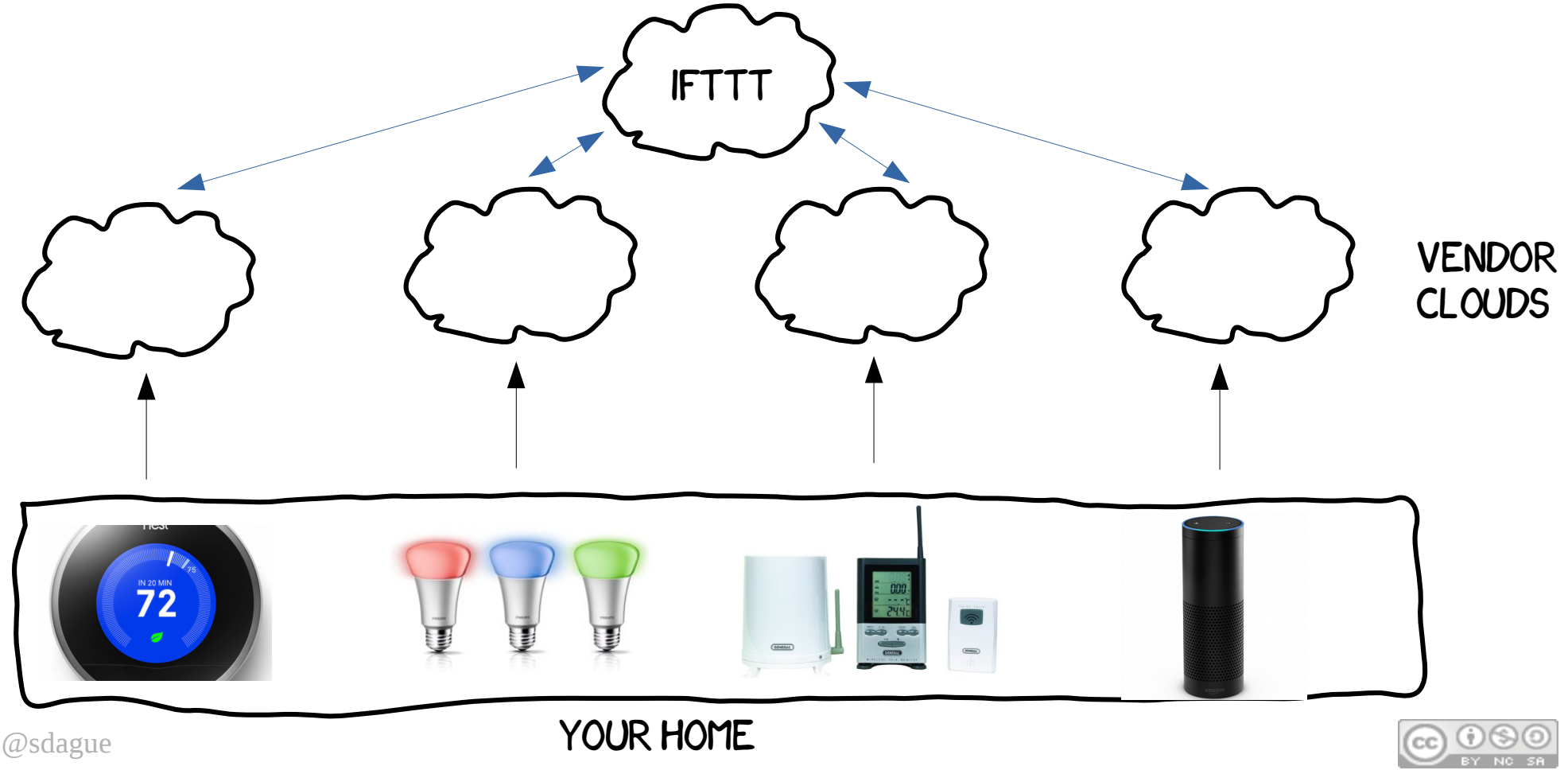
A depiction of the outages caused by today's attacks on Dyn, an Internet infrastructure company. Source: Downdetector.com.

@sdague

Why is this the reference architecture?

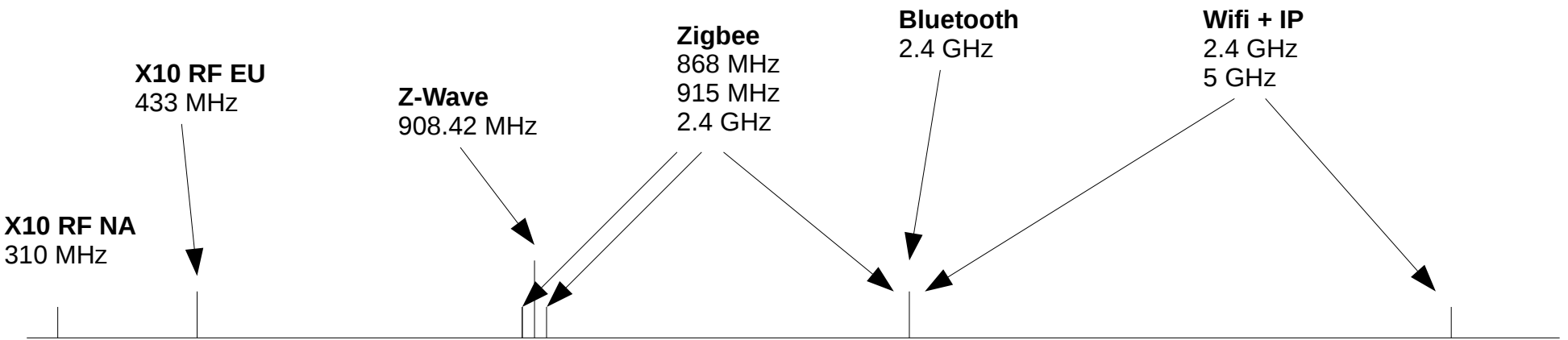


How to Automate Proprietary Silos



IoT Networking Layer 2/3

Every option has trade offs of cost / compatibility / range / availability / security

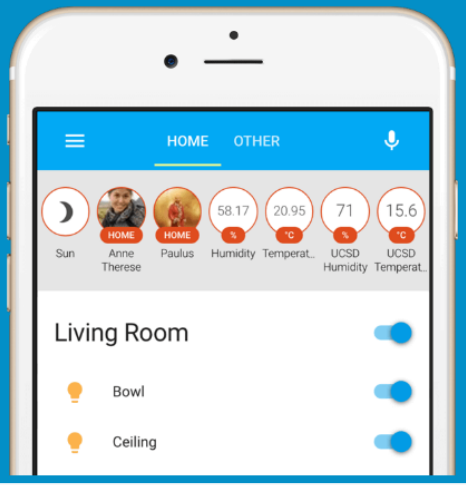


Things you might want to Internet

- Lighting
  - Philips Hue
  - Ikea
  - Wemo
- Door Locks
  - z-wave based
- AV / Audio
  - Wifi/ethernet
  - Sonos
  - Amazon
  - Google
  - Existing Receivers
- Weather Sensors
  - 433 Mhz based
  - z-wave based
  - wifi based
- Blinds
  - z-wave based
  - Proprietary Networks
- Motion Sensors
  - Zigbee
  - z-wave
  - 433 Mhz

Home Assistant

Getting started Components Docs Examples Developers Blog Need help?



Awaken your home

Home Assistant is an open-source home automation platform running on Python 3. Track and control all devices at home and automate control. Perfect to run on a Raspberry Pi.

GET STARTED VIEW DEMO BROWSE CODE ON GITHUB

Current Version: 0.47.0

Released: June 17, 2017

RELEASE NOTES

Join The Community

We love to help & talk home automation.

FORUMS CHAT DEV CHAT

Recent Blog Posts

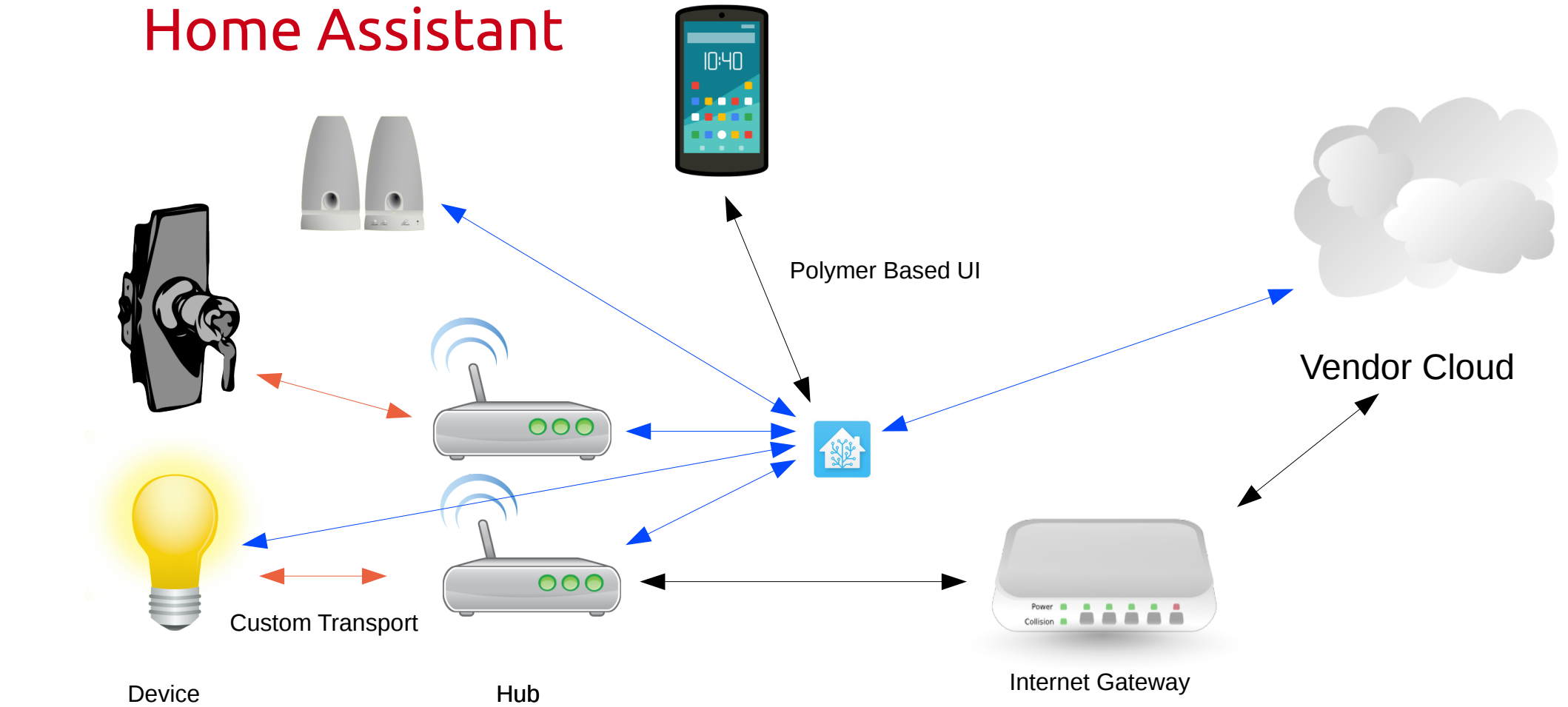
0.47: Python Scripts, Sesame Smart Lock, Gitter, Onvif cameras June 17, 2017

ZWave Entity IDs June 15, 2017

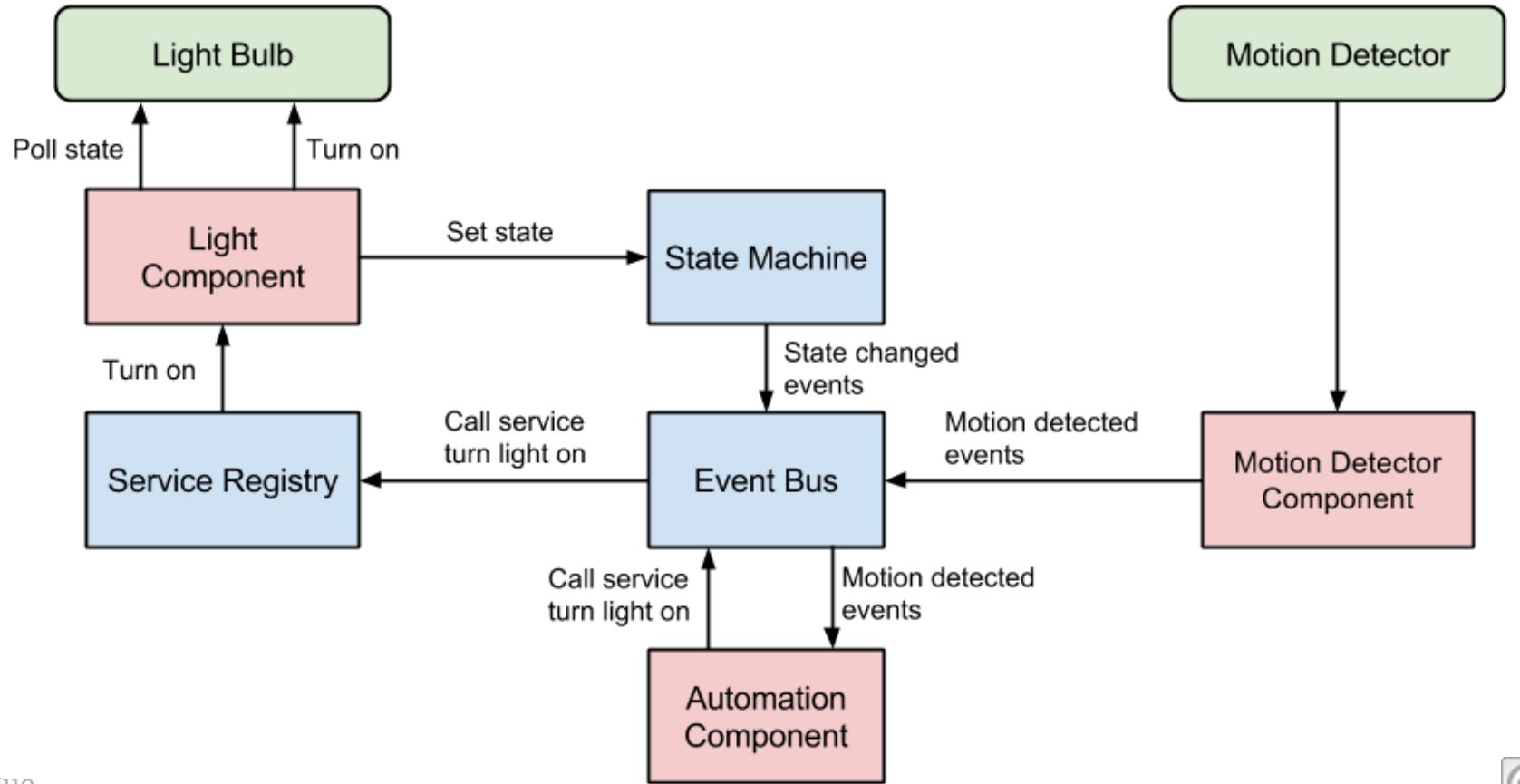
Linux Action Show special about Home Assistant June 10, 2017

@sdague

Home Assistant



Home Assistant Architecture



Note

Support for these components is provided by the Home Assistant community.

All (713)

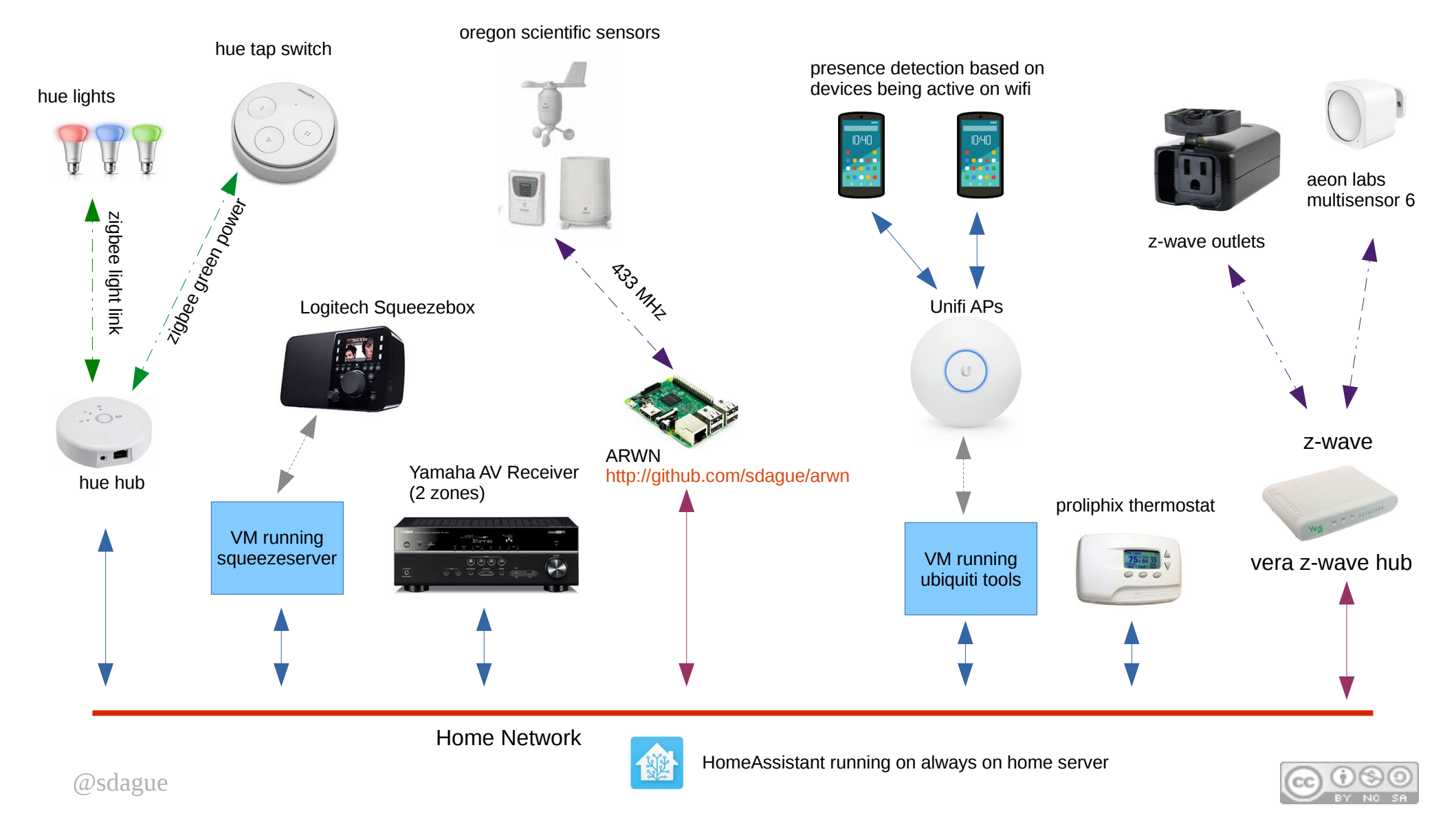
Featured

Added in 0.47 (22)
Added in 0.46 (5)
Added in 0.45 (15)

Alarm (13)
Automation (16)
Binary Sensor (52)
Calendar (3)
Camera (22)
Climate (21)
Cover (16)
DIY (19)
Downloading (5)
Energy (11)
Fan (5)
Finance (9)
Front end (4)
Health (2)
History (12)
Hub (57)
Image Processing (8)
Light (45)
Lock (9)

Search components...

Alexa / Amazon Echo voice	Apple TV media-player	Arduino diy	Belkin WeMo hub
Dark Sky weather	ecobee hub	Google Cast media-player	IFTTT automation
IKEA Trådfri (Tradfri) hub	Kodi media-player	MQTT hub	MySensors hub
Nest hub	Owntracks presence-detection	Philips Hue light	Plex media-player
Pushbullet notifications	Sonos media-player	Wink hub	Z-Wave hub


hue lights
hue tap switch
oregon scientific sensors
presence detection based on devices being active on wifi
aeon labs multisensor 6
z-wave outlets
zigbee light link
zigbee green power
433 MHz
Logitech Squeezebox
Unifi APs
z-wave
hue hub
ARWN
http://github.com/sdague/arwn
Yamaha AV Receiver (2 zones)
proliphix thermostat
VM running squeezeserver
VM running ubiquiti tools
vera z-wave hub
Home Network
HomeAssistant running on always on home server
@sdague

Running before Home Assistant

hue lights

hue tap switch

oregon scientific sensors

z-wave outlets

zigbee light link

zigbee green power

433 MHz

hue hub

Logitech Squeezebox

VM running squeezeserver

Yamaha AV Receiver (2 zones)

ARWN
http://github.com/sdague/arwn

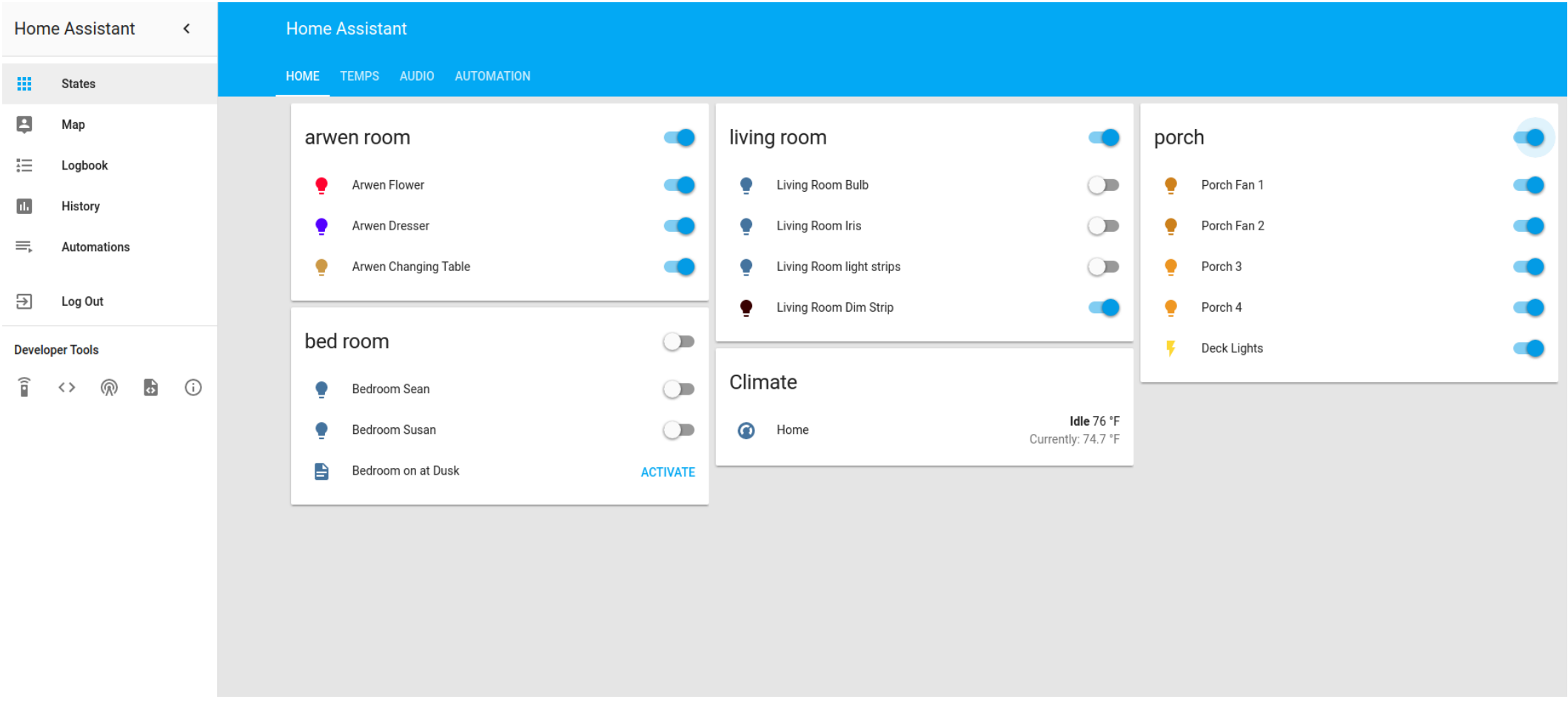
z-wave

vera z-wave hub

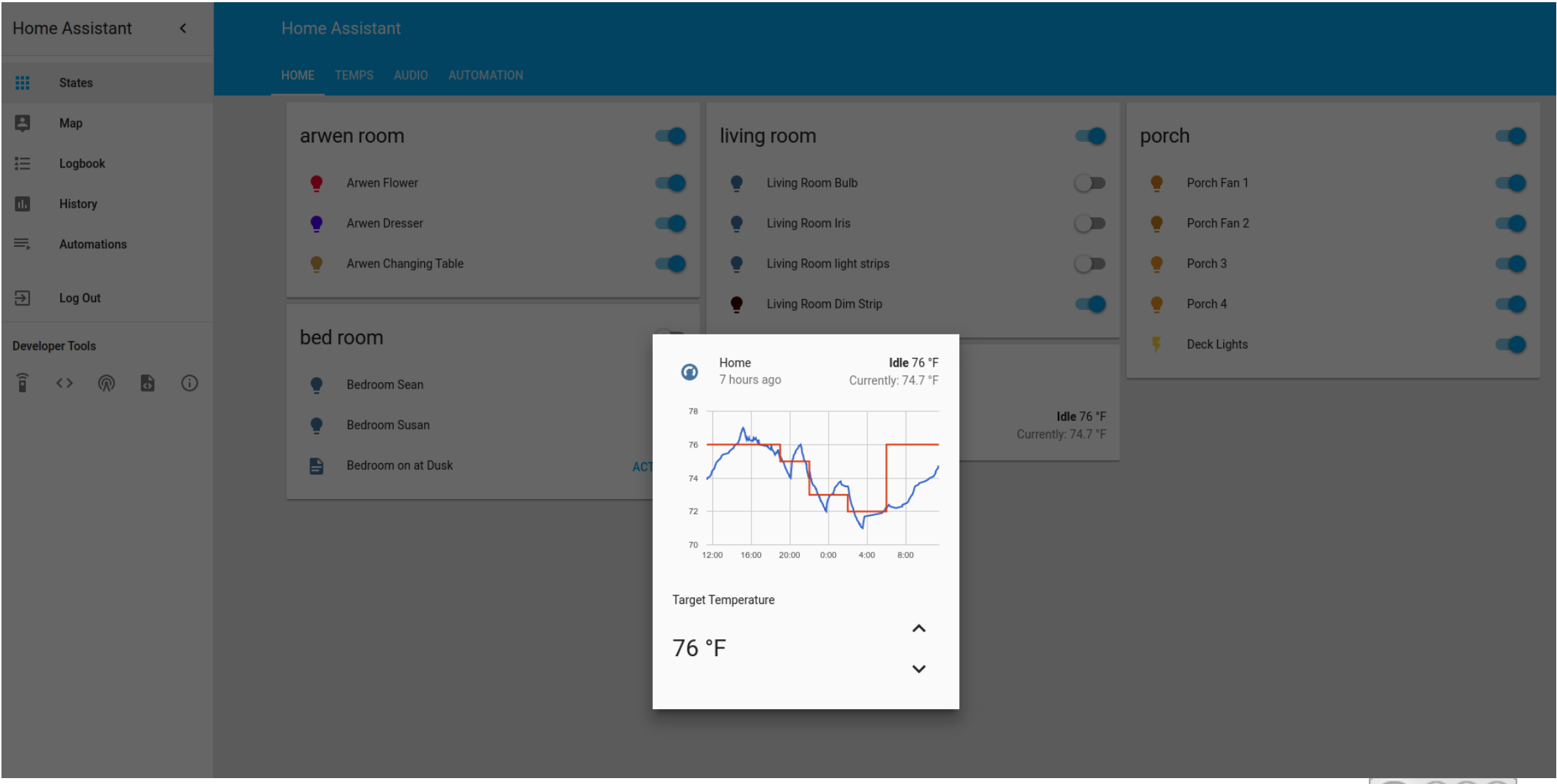
proliphix thermostat

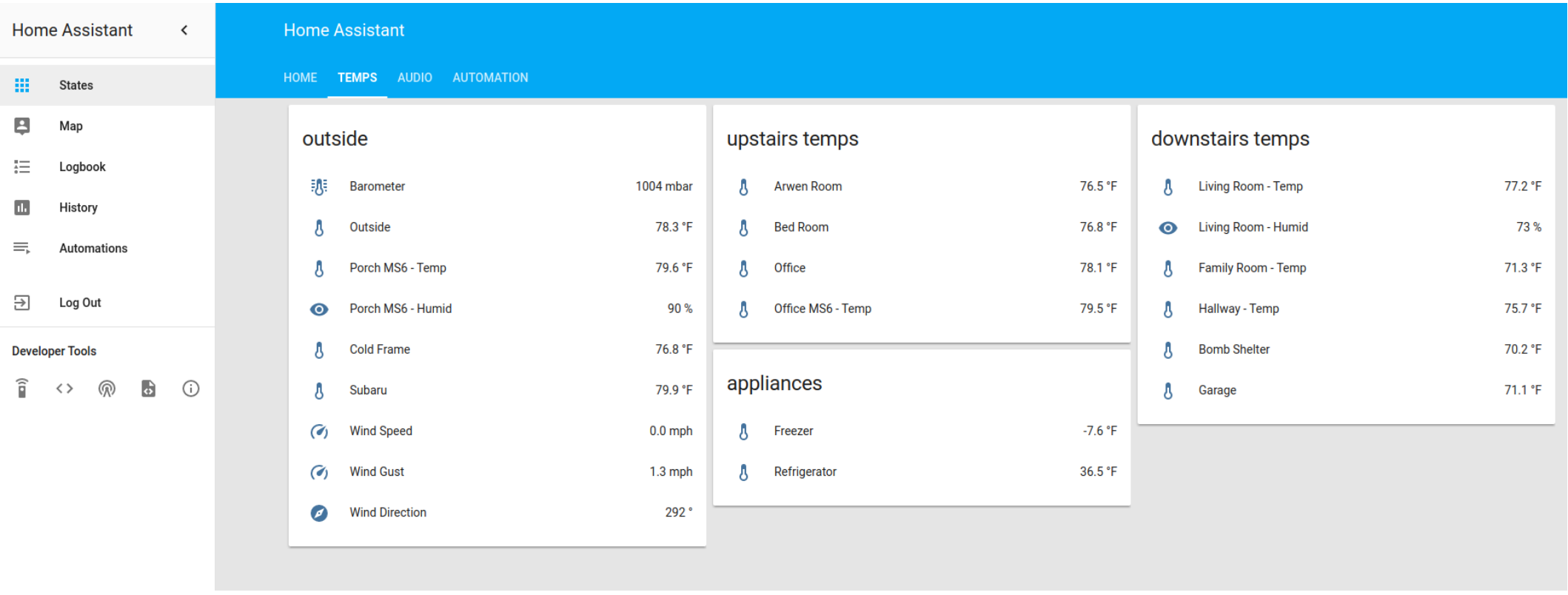
Home Network

@sdague



@sdague


Home Assistant
States
Map
Logbook
History
Automations
Log Out
Developer Tools
Home Assistant
HOME
TEMPS
AUDIO
AUTOMATION
arwen room
Arwen Flower
Arwen Dresser
Arwen Changing Table
bed room
Bedroom Sean
Bedroom Susan
Bedroom on at Dusk
living room
Living Room Bulb
Living Room Iris
Living Room light strips
Living Room Dim Strip
porch
Porch Fan 1
Porch Fan 2
Porch 3
Porch 4
Deck Lights
Idle 76 °F
Currently: 74.7 °F
Home
7 hours ago
Idle 76 °F
Currently: 74.7 °F
78
76
74
72
70
12:00
16:00
20:00
0:00
4:00
8:00
Target Temperature
76 °F



Home Assistant

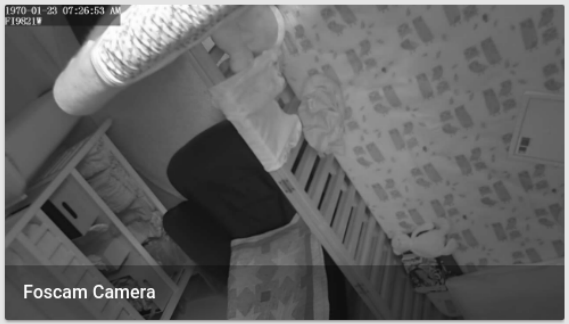
States
Map
Logbook
History
Automations

Log Out

Developer Tools

Home Assistant

HOME TEMPS AUDIO AUTOMATION



automations

- Turn on grow light - 6am
- Turn off porch
- Turn off office Music at 5pm
- Turn on porch lights after dark
- Turn on bedroom lights at night
- Turn on porch lights on motion
- Turn off grow light - 10pm

occupancy

Sean	home
Susan	not home
Office MS6	on
Hallway	off
Living Room	off
Porch MS6 1	off
Family Room	off

light levels

Family Room - Lux	73 lux
Hallway - Lux	113 lux
Living Room - Lux	37 lux
Office MS6 - Lux	47 lux
Porch MS6 - Lux	174 lux

Automation Example

Turn on the lights on the porch when there is motion and it's after 1 hour before sunset. Turn off lights on the porch, and any music playing on the porch, when the motion sensor flips back to idle.

```
script:
  porch_on:
    alias: "Turn On Porch Lights"
    sequence:
      - service: light.hue_activate_scene
        data:
          group_name: "Porch"
          scene_name: "Porch Orange"
```

```
automation:
 - alias: Turn on porch lights after dark
   trigger:
     platform: sun
     event: sunset
     offset: "-1:00:00"
   condition:
     condition: and
     conditions:
       - condition: state
         entity_id: light.porch_fan_1
         state: "off"
       - condition: state
         entity_id: binary_sensor.porch_ms6_1_129
         state: "on"
   action:
     service: scene.turn_on
     entity_id: scene.porch_lights_on

 - alias: Turn on porch lights on motion
   trigger:
     platform: state
     entity_id: binary_sensor.porch_ms6_1_129
     to: "on"
   # ensure that
   condition:
     condition: and
     conditions:
       - condition: state
         entity_id: light.porch_fan_1
         state: "off"
       - condition: sun
         after: sunset
         after_offset: "-1:00:00"
   action:
     service: scene.turn_on
     entity_id: scene.porch_lights_on
```

```
- alias: Turn off porch
    trigger:
      platform: state
      entity_id: binary_sensor.porch_ms6_1_129
      to: "off"
    action:
      service: scene.turn_on
      entity_id: scene.porch_lights_off
```

```
scene:
  - name: Porch Lights On
    entities:
      script.porch_on:
        state: on
      switch.deck_lights_48:
        state: on
  - name: Porch Lights Off
    entities:
      light.porch_fan_1:
        state: off
      light.porch_fan_2:
        state: off
      light.porch_3:
        state: off
      light.porch_4:
        state: off
      switch.deck_lights_48:
        state: off
      media_player.living_room_stereo_zone_2:
        state: off
```

```
scene:
  - name: Porch Lights On
    entities:
      script.porch_on:
        state: on
      switch.deck_lights_48:
        state: on
  - name: Porch Lights Off
    entities:
      light.porch_fan_1:
        state: off
      light.porch_fan_2:
        state: off
      light.porch_3:
        state: off
      light.porch_4:
        state: off
      switch.deck_lights_48:
        state: off
      media_player.living_room_stereo_zone_2:
        state: off
```

```
script:
  porch_on:
    alias: "Turn On Porch Lights"
    sequence:
      - service: light.hue_activate_scene
        data:
          group_name: "Porch"
          scene_name: "Porch Orange"
```

```
- alias: Turn on porch lights on motion
  trigger:
    platform: state
    entity_id: binary_sensor.porch_ms6_1_129
    to: "on"
  condition:
    condition: and
    conditions:
      - condition: state
        entity_id: light.porch_fan_1
        state: "off"
      - condition: sun
        after: sunset
        after_offset: "-1:00:00"
  action:
    service: scene.turn_on
    entity_id: scene.porch_lights_on
```

```
- alias: Turn on porch lights after dark
  trigger:
    platform: sun
    event: sunset
    offset: "-1:00:00"
  condition:
    condition: and
    conditions:
      - condition: state
        entity_id: light.porch_fan_1
        state: "off"
      - condition: state
        entity_id: binary_sensor.porch_ms6_1_129
        state: "on"
  action:
    service: scene.turn_on
    entity_id: scene.porch_lights_on
```

// Installing Home Assistant

Edit this page on GitHub

Getting Started Guide

Installation

Configuration

Automation

Automation 2

Presence detection

Use it!

You will need to install Home Assistant before we can get started. You can install Home Assistant on your computer or you can turn a Raspberry Pi into a dedicated Home Assistant hub.

Install Hassbian on your Raspberry Pi 3

Install Home Assistant on your computer

For alternative installation methods please take a look at the installation documentation.

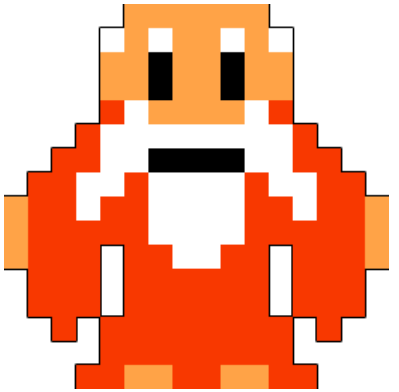
If you run into any issues, please see the troubleshooting page or communication channels. It contains solutions to many commonly encountered issues.

NEXT STEP: CONFIGURING HOME ASSISTANT »

Things you can learn with Home Assistant

- Event based programming
- Python 3
- Testing strategies
- Polymer
- The joy of debugging automations*
- Interfacing with obscure hardware
- Building a zero UI system

It is dangerous to go alone!



- Home Automation is fun*!
- Debugging Home Automation is exciting*!
- Be really careful what ecosystems you buy into
- Be really careful of "cheap" IoT devices
- Having an Open Source controller means you have much more control of your home

THANKS!

SEAN DAGUE
DAGUE.NET
@SDAGUE